

**Standard Operating Procedure for Using Phenol/Chloroform**

Print a copy and keep with your Safety Data Sheets and training documents.

|  |  |
| --- | --- |
| Department |  |
| Principal Investigator (PI) |  |
| PI Phone Number |  |
| Lab Manager |  |
| Lab Manager Phone Number |  |
| Emergency Contact |  |
| Emergency Contact Phone Number |  |

1. **Purpose**

The purpose of this document is to provide the information necessary to safely use phenol and chloroform in the \_\_\_\_\_\_\_\_\_\_\_ laboratory and to comply with OSHA standard 29 CFR 1910 Subpart Z (Phenol: [CAS#108-95-2](https://www.osha.gov/chemicaldata/chemResult.html?recNo=94), Chloroform: [CAS# 67-66-3](https://www.osha.gov/chemicaldata/chemResult.html?recNo=477)).

1. **Hazard Identification:**

Phenol:

* Acutely toxic; dermal, oral and by inhalation.
* Serious skin corrosion and eye damage
* Reproductive toxin

Chloroform:

* Select carcinogen
* Irritating to skin, eyes and respiratory system

Phenol and chloroform are widely used chemicals for nucleic acid purification in molecular biology. Both are listed as hazardous by OSHA and must be handled very carefully. Phenol is extremely destructive to the tissue of the mucous membranes and upper respiratory tract, and eyes. It is toxic if inhaled, swallowed or absorbed through the skin. Prolonged or repeated exposure may cause organ damage and reproductive issues. Chloroform is a select carcinogen, therefore is poses danger of serious damage to health by prolonged exposure through inhalation or ingestion. In addition, it is irritating to the eyes, respiratory system and skin.

Direct contact with phenol/chloroform solutions should therefore be strictly avoided. Stringent use of engineering controls and personal protective equipment is required.

1. **Engineering & Administrative Controls**

Phenol/chloroform must only be handled/used within the chemical fume hood, which is designed to pull air and fumes up and away from the user (Engineering Control).

All lab personnel who use phenol/chloroform must be trained on the hazards of phenol/chloroform, including being familiar with this SOP (Administrative Control).

The door to the \_\_\_\_\_\_\_\_\_\_ lab is posted with signage indicating the presence and hazards associated with phenol/chloroform (Administrative Control).

1. **Personal Protective Equipment (PPE)**

* *Hand Protection*: Viton or Slvershield gloves are recommended.
* *Eye Protection*: Safety glasses or splash goggles must be worn when handling phenol/chloroform.
* *Skin and Body Protection*: A lab coat must be worn when handling phenol/chloroform.
* *Respiratory Protection*: Phenol/Chloroform should always be used in fume hood, glove box, or in totally-sealed containers.

1. **Standard Operating Procedures for Handling Phenol/Chloroform:** 
   1. DO not breathe vapor. Do not get in eyes, on skin or on clothing. Avoid all exposure.
   2. As they deem necessary, the PI/supervisor should insert here any information about whether a special use-area is designated for this material/process.
   3. Add appropriate lab-specific information here describing how this material(s) is generally used. E.g., name of protocol, typical frequency done, quantities used, temperature and any additional safety measures, etc.
2. **Chemical Disposal**

All chemical waste must be disposed of in accordance with Federal and State regulations and UNM's Chemical Hygiene Plan. Phenol/chloroform and phenol/chloroform-containing wastes should be collected in suitable containers and properly labeled as soon as waste is added to the containers. Phenol/chloroform waste should be labeled as such:

**HAZARDOUS WASTE**

**Phenol/Chloroform waste**

**Toxic & Corrosive**

Call EHS at 277-2753 to schedule a pickup of waste phenol/chloroform and/or other waste chemicals.

1. **Spill Procedures:**

For small/minor spills (<1L), use the materials in the spill kit to clean up the spill. Minimum PPE for cleaning up a phenol/chloroform spill is safety glasses/goggles, gloves and lab coat. The spill clean-up materials must be double-bagged, tightly closed, labeled and picked up by EH&S for disposal.

Spills in excess of 1L of phenol/chloroform should not be cleaned up by lab personnel. In the event of a large/major spill of phenol/chloroform, evacuate the area and call:

* Campus Police -- 911 on a landline or 505-277-2241 on a mobile phone, and
* Environmental Health & Safety (EH&S) – 505-277-2753 during business hours, or
* EH&S Duty Officer Pager -- 505-951-0194 (enter your phone number after the message)

1. **First Aid Procedures**

In the event of a Phenol/Chloroform exposure, seek immediate medical attention.

* Skin Contact and Eye Contact should be washed immediately in safety shower or eyewash respectively for 15 minutes.
* If the exposure is severe, seek medical attention at the emergency room. If heading to UNMH, a non-injured person should contact the UNMH charge nurse in advance at 505-604-9349 with information on the chemical and nature of exposure.
* UNM employees should contact Employee Occupational Health Services (EOHS) at 505-272-8034.
* UNM students should contact Student Health Services at 505-277-7810.
* If the exposure occurs after hours, employees and students should seek medical treatment at a hospital emergency room.
* The supervisor of the injured person and EH&S must be notified as soon as possible after the exposure.
* The notice of Accident, Incident, or Spill form should be filled out on the EH&S website.

1. **Other Emergencies**

**Fire or Medical Emergency -- Dial 911**

**Life-Threatening Emergency, After Hours, Weekends and Holidays** – **Dial 911**

**Non-Life Threatening Emergency** – Call EH&S at 505-277-2753 to seek assistance and report the incident.

**Training Requirements**

All lab personnel who use phenol/chloroform must review the lab-specific Phenol/Chloroform SOP before beginning work.

**Principal Investigator SOP Approval**

By signing and dating here, the Principal Investigator certifies that this Standard Operating Procedure (SOP) for Using Phenol/Chloroform is accurate and provides information sufficient to safely use phenol/chloroform in the \_\_\_\_\_\_\_\_\_\_ laboratory.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature Printed Name/Title Date

I have read and understand the content of this SOP:

|  |  |  |
| --- | --- | --- |
| **Name** | **Signature** | **Date** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |